

# Grasping Wage Bargaining Power: trends, gaps and drivers

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## Abstract

To measure the productivity-wage gap correctly, I depart from the basic Insider-Outsider model and extend it to encompass a Wage Bargaining Power Index, which is fundamental for understanding labour markets. This index takes the value of 0 if workers are paid as little as possible and takes the value of 1 if they are paid the value they generate. In the first part, I find an index for Peruvian labour market which move around 0.26 in the period 2007-2019. Additionally, there is a clear gender gap, which favors men, who have an index ranging from 0.25 to 0.31, while the index for women fluctuates between 0.21 and 0.25. In the second part, I explore the main drivers and I find, in general, some positive effects on education and fixed-term contracts, and negative effects of being women, non-white, working in a small-enterprise, violation of labour rights, the job search rate and tax revenues paid. By gender, I find that while men are disadvantaged by their class status and race, education and fixed-term contracts empower women's wage bargaining power. However, working in a small business and the job search rate have a greater negative effect on women than on men.

**JEL codes:** J31, P16, B52, J16.

**Keywords:** Wage Bargaining Power, institutions, gender gap

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## 1. Introduction

Neoclassical economics holds that labour productivity and wages are closely related, so the latter being higher if the former is also higher. Although neoclassical approach allows recognizing the existence of gaps between labour productivity and wages, these are explained by the existence of price rigidities or imperfect competition mechanisms (imperfect and incomplete information, entry and quit barriers, monopsony, etc.). However, this is not the whole history, just one part of it. There are socio-political-labour institutions which are able to explain the gap between labour productivity and wages.

One of the ultimate purposes of this paper is to measure the productivity-wage gap correctly. To this aim, I created the Wage Bargaining Power Index, an index which takes the value of 0 if workers are paid as little as possible (wage equal to the reservation wage) and takes the value of 1 if they are paid the value they generate (wage equal to marginal labour productivity). As can be seen, neoclassical assumptions of labour market in perfect competition assumes that this index is equal to 1. This is an ex-post approach to wage bargaining, when wages and productivity are already realized, so that their determination *reveals* the bargaining power of the worker already employed<sup>1</sup>.

Additionally, this paper challenges the conventional economic approach to wage setting. It is not that productivity improvements, through increases in human capital, for example, increase wages, but that these productivity improvements empower the worker in the negotiation for wage increases. In this sense, there are some drivers which affect wage bargaining power through labour productivity, like education, work experience, occupations, etc., and others that influence directly wage bargaining power, like unemployment, social institutions (gender, race, class discrimination), employment/unemployment protection legislation, among others.

In sum, this paper connects ex-post approach to estimate the determinants of wage bargaining power index, based on realized wages and labour productivity. In this line, the main hypothesis is that institutions matter, as much or even more than Mincer's (1984) traditional variables. Furthermore, I expect to find some heterogeneity in the impact of human capital accumulation by gender on wage bargaining power.

The main contributions of this paper to the related literature are four. First, this paper provides a theoretic framework extension of wage setting, challenging the conventional approach which neglected the importance of power in wage bargaining. Second, this paper proposes a measure of wage bargaining power, a fundamental variable in the wage setting literature. To my knowledge, no attempt has been made to explicit the measure of this variable to date. Third, this paper highlights the importance of considering non-conventional drivers, as social, cultural, legal and economic institutions, in the wage setting literature. Consistent with the results obtained, it is evident that some variables that do not depend on you influence your bargaining power more than even those that you can modify, such as your education or experience. Finally, this paper presents evidence of the mixed effects of education by gender, thus contributing to the literature on gender wage gaps.

Based on some considerations about labour productivity and some imputations on the index, I find a Wage Bargaining Power Index for Peruvian labour market which moves

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<sup>1</sup> An ex-ante approach would be possible if there were information on the rejection of job offers since the salary offered does not match the expected bargaining power of the worker.

around 0.26 in the period 2007-2019. Additionally, there is a clear gender gap, which favors men, who have an index ranging from 0.25 to 0.31, while the index for women fluctuates between 0.21 and 0.25.

About drivers, in general, I find some positive effects on education and compliance with labour contract tenure, and negative effects of being women, poor and non-white, working in a small-enterprise, violation of labour rights, the unemployment rate and tax revenues paid. Concerning drivers by gender, I found that while men are disadvantaged by their class status and race (social institutions), education and compliance with labour contract tenure empowers women's bargaining power. However, working in a small business and the unemployment rate have a greater negative effect on women than on men.

The paper is distributed as follows. Section 1 presented starts with the introduction of the paper. Then, Section 2 continues with a brief literature review of some determinants of wage bargaining power. In Section 3, I develop the base theoretic model to build the index with some remarks. After that, Section 4 presents an application of the bargaining power index calculation for the Peruvian case. In Section 5 I define the empirical strategy of the paper, which mixes conventional variables and institutions, and present the results of the estimations. In section 6, I compute some robustness checks of the main regression. Finally, Section 7 opens a brief discussion about findings and Section 8 finishes with conclusions.

## 2. Literature review

This section aims to show what the empirical evidence on the determinants of bargaining power has found. On this point, I separate the literature into two blocks:

- 1) Conventional: they refer to variables that directly affect productivity and are aligned with the seminal work of Mincer (1984). Generally, these studies find a significant effect of education and work experience on wages, thus showing a close relationship between productivity and wages.
- 2) Institutional: these refer to the social, cultural, labor, political and economic variables that directly or indirectly affect not necessarily productivity, but wage bargaining power. In general, these studies defend the idea of incorporating the "power" variable in order to study wage setting correctly.

For the first block, based on Mincer (1974), improvements in human capital (like education or work experience) can lead to higher wages through improved labour productivity. In this line, Lemieux (2006) summarizes the majority of studies on education, work experience and wages that follow the Mincer equation and argues that it remains an accurate benchmark for estimating wage determination equations provided that it is adjusted for some models specification.

Although these authors do not make any reference to improvements in wage bargaining power, but rather in labour productivity (which is what explains wage improvements), it could be thought that wage bargaining power is behind this dynamic. If workers increase, for instance, their education level, and wage increase exceeds the increase in labour productivity, it would be evident that workers have increased their wage bargaining power since they can more easily transfer their productivity into wages. The same would apply to any variable that directly affects labour productivity, like work experience, expertise, etc.

For the second block, according to North (1991) “institutions are the devised constraint that structures political, economic and social interaction” (p. 97), and could be informal or formal rules. In this sense, institutional approach is central for labour economics because go beyond explanations when conventional variables can not be able to provide convincing answers. Particularly, institutional approach in labour economics helps to understand how *power* works. As Woodbury (1987: p. 1781) states, “a cognizance of power in the labor market is the most telling aspect of the institutionalist approach”, and this is absolutely challenging for mainstream economics<sup>2</sup>. Hence, this research is a stepping stone towards a better understanding of how labour markets actually work.

To present some evidence of how institutional variables affect wage bargaining power, I divided it into four groups: social variables, political variables, labour variables, and economic variables. For the first, following intersectional approach developed by Angela Davis (1983), the patriarchal, racist and classist structure has historically affected social groups that are in an inferior position in this structure, and, evidently, this is detrimental to their wage bargaining power.

In fact, Card, Cardoso and Kline (2013) found that women capture a smaller fraction of the company's rents than men, and this difference in bargaining power explains between 10% and 15% of the gender wage gap. Regarding ethnicity and racist structure, Shulman (1990) showed that while racial identification may increase or decrease the wage bargaining power of white workers depending upon circumstances, there is no doubt of racism detracts bargaining power of black workers. Considering classist characteristics, in a recent paper, Hick and Marx (2022) showed the relation between working poor and under-protected, underpaid jobs in places like fast-food joints, supermarkets, hotels and bars, in sum, a close relation between working poor and lower bargaining power. Particularly, they found that this happens even in rich democracies which proper regulatory institutions.

For the second group, institutional political variables, such as neoliberalism, have made important contributions to the empirical political economy literature, remarking its transversal perspective. For example, in research for Canada, Russel and Dufour (2016) argue that the synergy interaction of social, economic, political and cultural influences of neoliberalism undermines workers’ bargaining power, “thereby subverting workers’ capacity to secure the fruits of their growing productivity” (p. 38). Additionally, the authors support the importance of social institutions described above, considering that an intersectional analysis is necessary to understand the experience of particular workers in austerity labour markets<sup>3</sup> (p. 39).

Respect institutional labour variables, the third group of this institutional approach, there are some institutions which have positive effects on wage bargaining power, such as labour inspection to enforce compliance with labour rights, employment and unemployment protection legislation in general, and unionization and its capacity for collective bargaining and to exert pressure through strikes.

For example, Shoma (2017) showed how violation of Bangladeshi women ready-made garments workers’ basic labour rights has serious negative consequences in terms of loss of bargaining power. Also, Keune (2021) reviews the literature about the effects of collective

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<sup>2</sup> For further discussion of criticisms of the neoclassical framework, see Woodbury (1987).

<sup>3</sup> The authors define an “austerity labour market” as the erosion of workers’ ability to secure compensation commensurate with growing productivity.

bargaining and unions in bargaining power and explained its influences on the wage share, in favor of workers. Finally, the relation between unemployment and worker bargaining power has been extensively studied and is a key piece in bargaining theory because captures the concept of “outside options” (Iversen and Rosenbluth, 2005). In this line, in a recent paper, Stirati and Meloni (2021) found results that confirm an adverse impact of unemployment on labour share due to a decline in worker bargaining power.

Finally, fluctuations in real economy should directly affect the worker’s bargaining power. In this line, Morin (2017) examines the effect of business cycle on trade unions behavior and found that bargaining power of workers through unions is reduced in the face of a negative shock to the economy, and that trade unions choose fewer jobs at equal wages, rather than a diminish in wages, as the Insider-outsider theory (Lindbeck and Snower, 1984) describes.

### 3. Theoretical framework

This section will be responsible for building the basis of a theoretical framework to explicitly calculate wage bargaining power. As has been seen, no previous research has specifically developed this measurement, and it was only approached in a conceptual, lateral manner.

The starting point is the Insider-outsider model, developed by Lindbeck and Snower (1984), which I will later transform. The following table shows the return of the economic agents (firm and worker) for the decision they have made, either to have an agreement on hiring or not to have one.

*Table 1 Outcomes of Insider-Outsider model*

	Agreement	Disagreement
Firm	$\pi(p)$	-f
Worker	$W(p)$	b

Source: Lindbeck and Snower (1984)

As can be seen, both profits ( $\pi$ ) and wages ( $w$ ) depend on the bargaining power of the worker  $p$ , which belongs to the interval  $[0,1]$ .

Unlike the basic theoretical model, which requires knowing the value of  $p$  in order to derive wages and benefits, the theoretical model I develop here follows a different path, but under the same logic. Thus, it is assumed that wages and profits are indeed determined by bargaining power. However, this power  $p$  is *revealed* through realized wages and profits, that is, in equilibrium.

In this sense, wages (and profits) would be a share between marginal labour productivity (the value that the worker contributes to the firm) and the reservation wage (the minimum value that the worker requires to accept the job), mediated by wage bargaining power. The following table shows the returns to economic agents for the minimum and maximum value that wage bargaining power can take.

Table 2 Outcomes of wage bargaining

	$p(\cdot)=0$	$p(\cdot)=1$
Firm	$A - W_{rw}$	0
Worker	$W_{rw}$	$A$

Source: Own creation

Considering  $A$  the marginal productivity of labour and  $W_{rw}$  the reservation wage, the Wage Bargaining Power Index ( $p$ ) reflects the power of workers to translate their productivity into wages, that is, the power they have to appropriate surplus production (Kalecki, 1943, Manzini and Snower, 2002). In this sense, there are two important remarks:

1. If  $p(\cdot) = 0$ , firms have all power over output, so  $W = W_{rw}$ . Hence, profits absorb all productivity gains. This is the case of monopsony labour markets.
2. If  $p(\cdot) = 1$ , workers have all power over output, so  $W = A$ . Hence, wages absorb all productivity gains. This is the case of perfect competition labour markets.

In this sense, it is reasonable that bargaining power is determined between these two extreme cases. Furthermore, assuming a non-linear relationship between bargaining power  $p$  and wages (and profits), one has the following wage equation.

$$W = A^p * W_{rw}^{1-p} \quad (1)$$

From (1), taking logarithms<sup>4</sup> and clearing  $p$ , the wage bargaining power is calculated as follows<sup>5</sup>:

$$p(\cdot) = \frac{w - w_{rw}}{a - w_{rw}} \quad (2)$$

Thus, the wage bargaining power ( $p$ ) is determined by considering the equilibrium wages ( $w$ ) for a given marginal labour productivity  $a$ , standardized by the reservation wage ( $w_{rw}$ )

One of the advantages of this approach is that it allows us to go backwards in the determination of wages, and to investigate the determinants that directly or indirectly affect wage bargaining power. The direct determinants are the institutional variables detailed in the literature review, and the indirect determinants are those that affect bargaining power through labour productivity, such as education and experience.

To better illustrate this new theoretical framework, let us consider the example of schooling. According to Mincer (1984), both productivity and wages should increase due to improvements in human capital. However, while the effect on wages is clear, the effect on bargaining power is not. Considering bargaining power as the power to dispute the productive surplus, increases in human capital could diminish the bargaining power of workers if productivity improvements do not translate into wage improvements of equal magnitude.

<sup>4</sup> Variables in logarithms are represented in lower case.

<sup>5</sup> Appendix A shows the resolution of the model

#### 4. An application for Peruvian labour market

In this section, I will implement the theoretical framework described above and calculate the wage bargaining power index for Peruvian case<sup>6</sup>.

##### 4.1. Data sources

For wages, I will use the database of the National Household Survey (ENAHO, for its acronym in Spanish), prepared by the National Institute of Statistics and Informatics (INEI), for the period 2007 to 2019<sup>7</sup>. I measured wages as labour income of full-time private wage-earners. Additionally, this database is one of the main data sources of this paper, because it provides information about labour income and individual characteristics of workers to be used in a subsequent econometric section<sup>8</sup>. For reservation wage, I take legal minimum wage as a proxy of this variable.

For marginal productivity of labour, related literature usually proxies as average labour productivity from National Accounts, dividing Gross Domestic Product (GDP) by the number of employed. Hence, I will use regional and sectorial disaggregation for gross value added coming directly from INEI for the same period as wages. The advantage of this measure is that it provides a more representative indicator than one that comes from a survey.

However, for a labour market structure such as Peru's, which has significant non-wage economic activity (e.g., self-employment), estimating labour productivity in this way can be misleading. In this sense, first, based on the ENAHO, I calculated the percentage of total labour income coming from a salaried relationship (wage-earners and employers). Then, since GDP can be measured through income approach, I imputed “wage-related GDP” by multiplying GDP times the percentage of labor income calculated above<sup>9</sup>.

Finally, I used regional deflators to get real values of each variable. Figure 1 plots these variables for period 2007-2019. As can be seen, there is a clear difference between conventional labour productivity mean (“Labour productivity 1”) and labour productivity coming from wage-related GDP (“Labour productivity 2”). Also, while real wage and minimum wage have remained almost constant throughout the period, labour productivity has shown a growing trend (sustained, in the case of the conventional ones, but stagnant since 2011 for the one that considers only salaried relationships).

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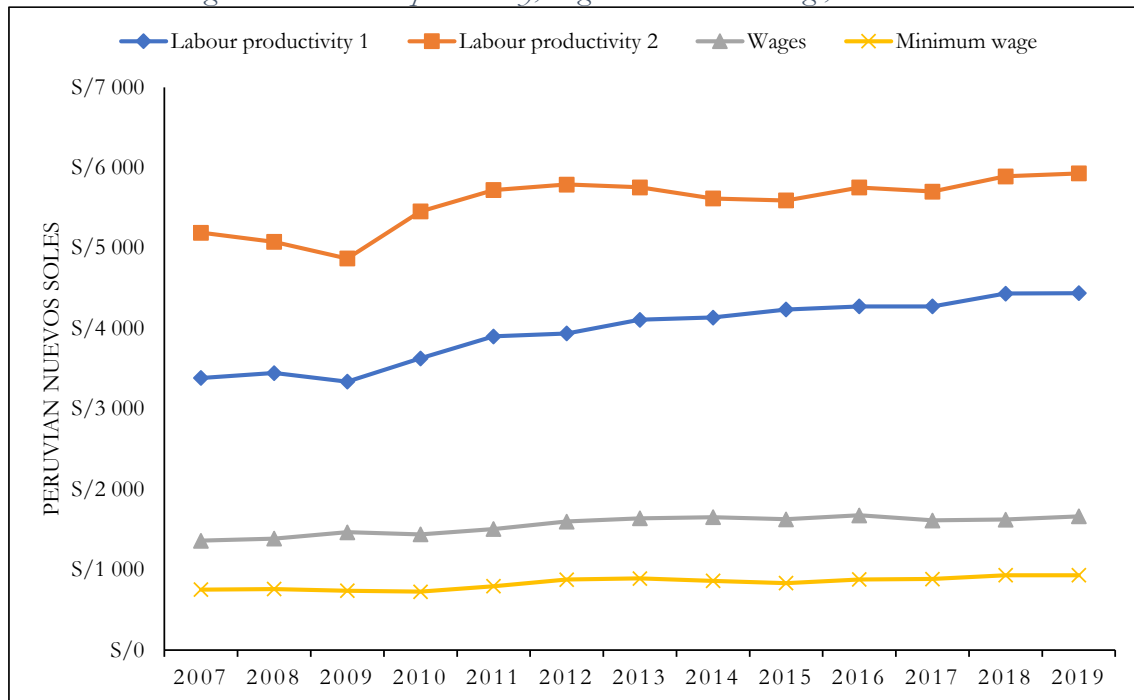
<sup>6</sup> Appendix B shows a quick view of the Peruvian labour market structure useful to understand this application.

<sup>7</sup> I do not consider 2020 and 2021 to avoid structural break problems due to the Covid-19 pandemic.

<sup>8</sup> Annex 1 sums the other variables, their definition and the level of disaggregation I used from ENAHO. Additionally, Annex 2 shows the corresponding description for variables coming from different government institutions.

<sup>9</sup> Also, by doing so, the cases for region-sector in which labour productivity was lower than real wages, or even the minimum wage, are greatly reduced.

Figure 1 Real labour productivity, wages and minimum wage, 2007-2019



Source: INEI, MTPE.

Own elaboration.

With this information, now I am able to calculate the wage bargaining power index for the Peruvian case.

#### 4.2. Wage Bargaining Power Index: a measure for Peru

As I detailed above, the maximum disaggregation I could get for GDP was the region-sector level. In this sense, I will consider the 25 regions of Peru (24 departments and the Constitutional Province of Callao) and each will be divided into 3 sectors, primary (agriculture, fishing and mining), secondary (manufacturing and construction) and tertiary (commerce and services). The period of analysis will be from 2007 onwards since GDP information with this disaggregation is publicly available as of that date.

In this way, the wage bargaining power index is calculated with a macro-panel database and is expressed as follows:

$$P_{rs,t}(\cdot) = \frac{w_{rs,t} - mw_{r,t}}{a_{rs,t} - mw_{r,t}} \quad (3)$$

Where,  $w_{rs,t}$  is the logarithm of average monthly real wage of region  $r$  in sector  $s$  in year  $t$  of full-time private salaried,  $mw_{r,t}$  is the logarithm of real legal minimum wage of region  $r$  in year  $t$ , which serves as a proxy for the reserve wage. Also,  $a_{rs,t}$  is the logarithm of average labour productivity of region  $r$  in sector  $s$  in year  $t$ , which is calculated dividing wage-related real GDP over number of full-time private salaried.

Before calculating the wage bargaining power index, it is necessary to evaluate whether some of the practical assumptions of the theory developed above fit the reality of the Peruvian labor market. For example, since wage determination is a ratio of the reservation wage and marginal labour productivity, in the practical case, this means that the wage must



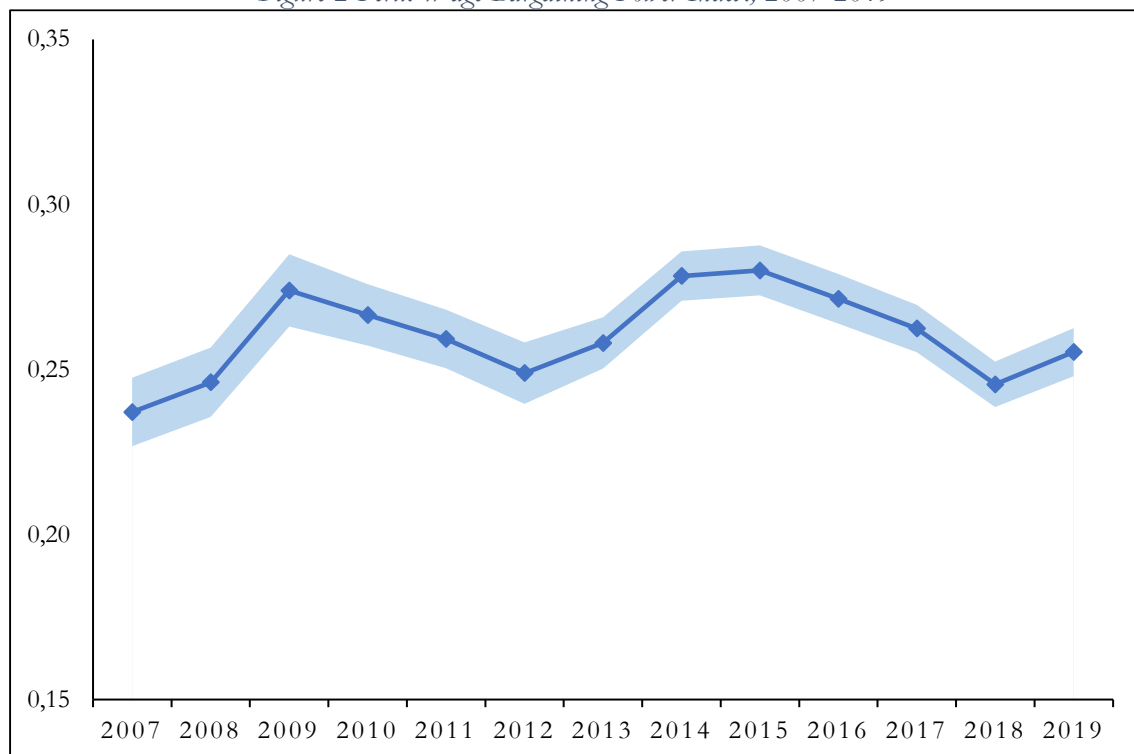
be greater than or equal to the minimum wage and that average labour productivity must be greater than or equal to the wage.

$$\text{Minimum wage} \leq \text{wages} \leq \text{labour productivity}$$

While there are no cases in which wages exceed average labour productivity, there are 53 times (5,4% of all observations) where the minimum wage in the region-sector exceeded the average wage. For these cases, if the index calculation formula is followed, the wage bargaining power index would be negative. Thus, for these extreme cases, rather than eliminating them from the sample, I impute the index value to 0.

Figure 2 shows the Wage Bargaining Power Index for Peruvian labour market for the period 2007-2019<sup>10</sup>. As can be seen, the index fluctuates around 0.26, which means that workers have only a quarter of the total power they would need to have for all their productivity to be translated into wages. Additionally, there appear to be two well-defined cycles: the first from 2007 to 2012, and the second from 2012 to 2018, both of almost equal duration. Likewise, it would appear that 2019 is the beginning of a third cycle for the study period; however, the Covid-19 pandemic may have changed this pattern.

Figure 2 Peru: Wage Bargaining Power Index, 2007-2019



Note: For wages lower than minimum wage, the index assumes a value of 0.

Source: INEI, MTPE.

Own elaboration.

### 4.3. Gender gap

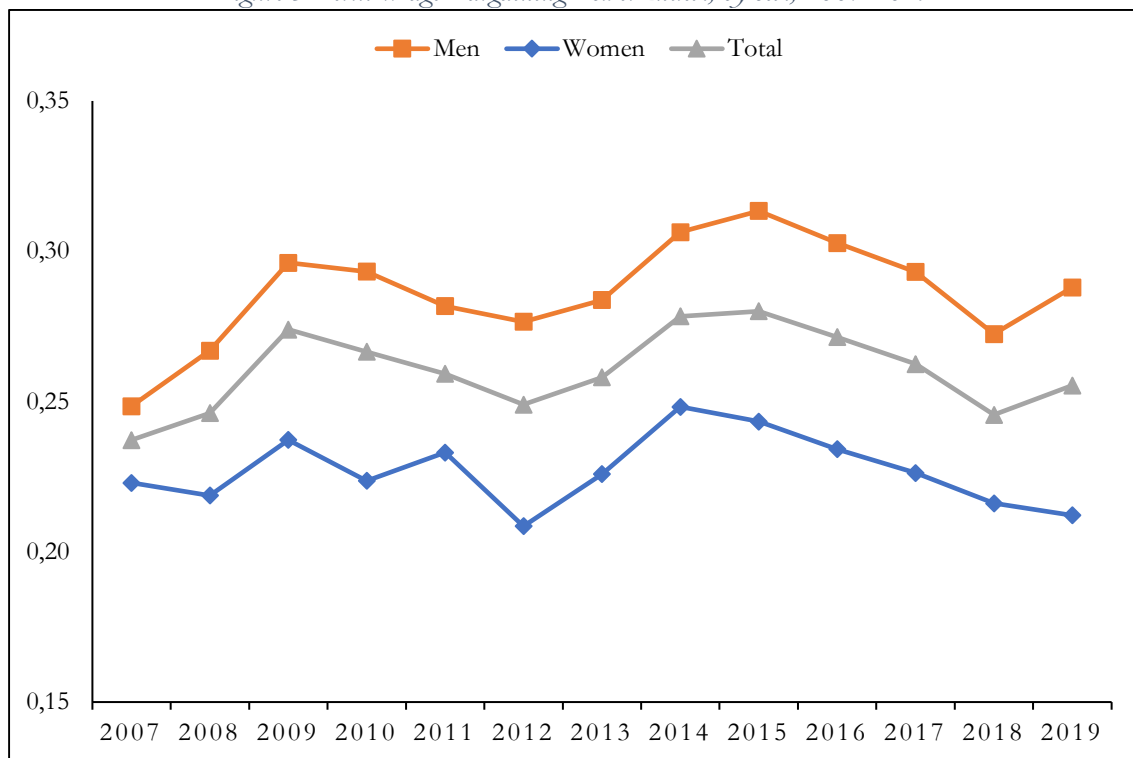
It is also interesting to understand the heterogeneity of the wage bargaining power index. Thus, this brief section will analyze the existing gap in wage bargaining power by gender. For a correct calculation of this gap, it will be necessary to disaggregate labor productivity by gender. For this purpose, I use the labor income share by gender from World Inequality

<sup>10</sup> See Table A1 for more details on the wage bargaining power index by region-sector.

Database<sup>11</sup>, which has a yearly female labour income share, and multiply it by the corresponding average labour productivity.

In this way, Figure 3 shows the wage bargaining power index by gender. As can be seen, the index for men is very similar to the total, since the proportion of men is higher. In addition, it should be noted that the maximum value of women does not exceed the minimum value of men. Also, while the cycles of the index are very well defined in the case of men, only the second cycle is clearly shown in women, which does not end in 2018.

Figure 3 Peru: Wage Bargaining Power Index, by sex, 2007-2019



Note: For wages higher than labour productivity mean, the index assumes a value of 1; and for wages lower than minimum wage, the index assumes a value of 0.

Source: INEI, MTPE.

Own elaboration.

## 5. Drivers of Wage Bargaining Power for Peruvian case

This section aims to estimate the determinants of wage bargaining power, whether direct (institutional) or indirect (through labor productivity). Regarding the explanatory variables, following the empirical literature summarized in the corresponding section, I have tried to replicate the use of these variables with the information available in the Peruvian context. Unfortunately, the period of availability of all variables is heterogeneous, therefore, in order to have a strongly balanced panel database, the period is shortened from 2012 to 2019. In this sense, the number of observations is 600, since there are 25 regions, 3 sectors and 8 years. Table 1 shows some statistics of the explanatory variables to be used in the econometric model<sup>12</sup>.

<sup>11</sup> <https://wid.world/data/>

<sup>12</sup> Table A2 shows the operational definition of each explanatory variable.

Table 3 Explanatory variables

Type	Variables	Obs	Mean	Std. Dev.	Min	Max
Mincer's variables	Log of years of education	600	2,31	0,17	1,74	2,56
	Log of years of work experience	600	2,88	0,21	2,16	3,43
Socio-institutional variables	Gender share	600	0,23	0,15	0,00	0,62
	Class share	600	0,16	0,12	0,00	0,67
	Race share	600	0,35	0,26	0,00	1,00
Labour economic and institutional variables	Small-enterprises share	600	0,69	0,16	0,09	1,00
	Ratio of affected workers	600	0,12	0,20	0,00	1,00
	Permanent contract share	600	0,08	0,08	0,00	0,63
	Fixed contract share	600	0,33	0,15	0,00	0,70
	Number of unions	600	7,38	11,35	0,00	79,00
	Job search rate	600	0,08	0,03	0,02	0,20
	Log of tax revenues	600	12,71	1,64	10,07	18,22
Politic-institutional variables	Number of social conflicts	600	7,75	6,70	0,00	32,00
Business cycle	Variation of logarithm GDP	600	0,05	0,13	-0,81	1,61
Sample	Log of full-time wage earners	600	10,14	1,13	7,83	14,16

Source: INEI, MTPE, Defensoría del Pueblo.

In this sense, to estimate the drivers of wage bargaining power the following fixed effects panel model is estimated:

$$\ln P_{rs,t} = \beta_0 + \gamma_{rs,t} \beta_{2,l} + \delta_{r,t} \beta_{3,m} + \varepsilon_{rs,t} \quad (4)$$

Where  $\ln P_{rs,t}$  is the logarithm of the Wage Bargaining Power Index in region  $r$ , sector  $s$  and year  $t$ ,  $\gamma_{rs,t}$  is a vector of  $l$  region-sector-year level explanatory variables, and  $\delta_{r,t}$  is a vector of  $m$  region-year level explanatory variables, and  $\varepsilon_{rs,t}$  is the stochastic error term. As the index was constructed with realized wages and productivity, it is possible to attribute a direct and unidirectional effect of the explanatory variables on the wage bargaining power index.

Table 2 shows the results of the econometric estimation (4). Column 1 considers only Mincer's variables (education and work experience). As can be seen, a positive and highly significant effect of years of formal education on wage bargaining power is found. Thus, a 1% increase in the average years of schooling generates an increase in the wage bargaining power index of 3.765%. In addition, Column 2 includes the socio-institutional variables to the previous specification. Thus, I find that the higher proportion of women, poor and indigenous and black workers generate a significant decrease in wage bargaining power. In particular, it highlights that the effect of being a woman is almost one percentage point greater than that of education. Likewise, the positive effect of education is reduced by almost 1 percentage point with the inclusion of these new variables.

Finally, Column 3 includes all remaining variables. As can be seen, except for the proportion of workers in small firms, which has a highly significant negative effect on wage bargaining power of -1.077%, none of the variables that were added was significant. Also, the significance of education and socio-institutional variables is maintained, although the effect of education is further reduced. Thus, the effect of being a woman or even poor is greater than the benefit of education.

*Table 4 Peru: Drivers of Wage Bargaining Power Index*

<b>Variables</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Log of years of education	3,765*** (1,201)	2,86*** (0,971)	2,191** (1,068)
Log of years of work experience	0,664 (0,439)	0,442 (0,454)	0,448 (0,4)
Gender share		-3,803*** (1,34)	-3,842*** (1,392)
Class share		-2,352** (0,96)	-2,2** (1,008)
Race share		-1,837** (0,753)	-1,71** (0,832)
Small-enterprises share			-1,077** (0,524)
Ratio of affected workers			-0,058 (0,221)
Permanent contract share			1,131 (1,061)
Fixed contract share			1,006 (0,923)
Number of unions			-0,009 (0,007)
Job search rate			-0,689 (1,765)
Log of tax revenues			-0,22 (0,17)
Number of social conflicts			0,009 (0,009)
$\Delta$ GDP			0,077 (0,205)
Log of full-time wage earners	0,538** (0,216)	0,645*** (0,228)	0,814*** (0,228)
Constant	-17,668 (5,275)	-14,117*** (4,074)	-11,196** (5,187)
N	600	600	600
AIC	1 377	1 322	1 324
R <sup>2</sup> adjusted	0,053	0,14	0,149

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

Considering that the effect of the proportion of women was the determinant with the greatest impact on wage bargaining power, I estimate the same model specification for men and another for women. Table 3 summarizes the coefficients found. In the first place, it highlights the appearance of new significant determinants and the disappearance of others for each gender.

For example, in the case of men, education, although the sign of the estimator is positive, lost its significance. The same is true for the proportion of poor workers and workers in small businesses, whose negative effects are no longer significant. In addition, two determinants that gained significance with the male-only sample: the proportion of permanent contracts (1,633%) and tax revenues (-0,324%). In comparison with the full sample, just indigenous and black share remains its negative significance, although is lower in absolute values.

In the case of women, the effect of education remains positive and significant, and even slightly larger (2,233%). Additionally, the socio-institutional variables are no longer significant; however, the negative effect of working in a small company is much larger (in absolute value) than for the full sample. Indeed, this effect (-2.721%) is even larger than the positive effect of education (2.233%). Finally, the positive effect of fixed-term contracts on women's wage bargaining power is particularly striking, which increases by 4.093% for having a fixed-term contract.

In summary, dividing the sample by gender allows us to observe the clear heterogeneity of the determinants of wage bargaining power. While for men, racial characteristics and taxes are particularly detrimental, women benefit much more from increases in human capital and having a fixed-term contract, even though the negative effect of working in a microenterprise is greater.

*Table 5 Peru: Drivers of Wage Bargaining Power Index by gender*

<b>Variables</b>	<b>General</b>	<b>Men</b>	<b>Women</b>
Log of years of education	2,191** (1,068)	1,194 (1,044)	2,233** (0,9)
Log of years of work experience	0,448 (0,4)	0,643 (0,488)	0,283 (0,403)
Gender share	-3,842*** (1,392)	(omitted)	(omitted)
Class share	-2,2** (1,008)	-1,372 (0,83)	-0,101 (0,863)
Race share	-1,71** (0,832)	-1,393* (0,77)	1,221 (0,919)
Small-enterprises share	-1,077** (0,524)	-0,183 (0,512)	-2,721** (1,23)
Ratio of affected workers	-0,058 (0,221)	0,045 (0,196)	0,292 (0,402)
Permanent contract share	1,131 (1,061)	1,633* (0,843)	2,239 (1,502)
Fixed contract share	1,006 (0,923)	0,793 (0,747)	4,093*** (0,933)
Number of unions	-0,009 (0,007)	-0,002 (0,004)	-0,003 (0,017)
Job search rate	-0,689 (1,765)	-2,444 (1,879)	0,746 (4,196)
Log of tax revenues	-0,22 (0,17)	-0,324** (0,153)	0,236 (0,639)
Number of social conflicts	0,009 (0,009)	0 (0,013)	0,014 (0,028)
$\Delta$ GDP	0,077 (0,205)	-0,166 (0,152)	0,575 (1,061)
Log of full-time wage earners	0,814*** (0,228)	0,844*** (0,269)	0,214 (0,319)
Constant	-11,196** (5,187)	-9,541* (4,868)	-14,882* (8,691)
N	600	600	593
AIC	1324	1217	2417
R <sup>2</sup> adjusted	0,149	0,094	0,203

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

## 6. Robustness checks

This section presents some robustness tests to the previously presented estimates. However, rather than showing the reliability of the previous regressions, the objective of this section is to open up further discussion on what would happen if the estimated model were specified differently, and whether doing so would yield more reliable results.

### 6.1. Conventional labour productivity.

As explained in the respective section, the estimated wage bargaining power index was calculated with labor productivity from wage-related GDP, since the region-sector production is based on a considerable composition of self-employed. Since the related empirical literature uses conventional labor productivity, which is GDP divided by the total number of employees, this section considers shows the results of this estimation.

Table A3 shows the results of this estimation. Beyond small changes in magnitude, the significance and sign of the coefficients are maintained concerning the estimation that used the more precise labour productivity. Probably, the sample of men underwent the most changes, where race and permanent contracts lose significance, but education, working in a small business, and the search rate gained significance.

### 6.2. Not imputing index to 0.

Additionally, as explained above, for the central estimation, some region-sectors where the minimum wage was higher than the average wage were imputed at 0. Table A4 shows the results of the estimation without imputed indices, that is, without region-sectors where the minimum wage is higher than the average wage. In addition to the loss of significance of some coefficients (socio-institutional variables seem to be less important), typical of the reduced sample, the high significance of 3 variables that were not obtained in the estimation with the imputed index stands out. These are the positive effect of the types of contracts, and the negative of the job search rate and economic growth.

With respect to the types of contract, a positive effect is found for both, with a greater positive effect for permanent contracts (0.988%) than for fixed-term contracts (0.977%), and greater for women (2.46% and 1.904%) than for men (0.781% and 0.701%), respectively. Regarding the job search rate, unlike the imputed sample, this estimation finds a clear negative and significant effect on wage bargaining power (-2.401%), which is greater in women (-4.208%) than in men (-1.682%). Finally, this is the first time that we find evidence of the effect of the economic cycle on bargaining power, which is negative for the total sample (-0.285%) and men (-0.246%).

### 6.3. Moulton problem

Finally, a possible criticism of the main estimation is that it presents some explanatory variables, such as the job search rate, which are defined at a more aggregated level (regional) than the dependent variable, the Wage Bargaining Power Index (region-sector). Moulton (1986, 1990) explains how this can lead to the standard errors of the aggregate variable being underestimated<sup>13</sup>. To solve this problem, a macro-panel database at regional level is estimated. This will reduce the number of observations from 600 (region-sector panel) to only 200 (regional panel). Although the results obtained for this new sample cannot be compared completely with those estimated in the main equation (4), this exercise serves to highlight the importance of modifying the aggregation of the data.

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<sup>13</sup> In this case, this problem could occur when the bargaining power index for the same region shares some common component of variation that is not fully attributable to either the region-sector or the regional level explanatory variables. This would cause the error term to be positively correlated with wage bargaining power in the same department.

Table A5 shows the results of this new aggregation for the total sample, for men and women. For the total sample, although race share lost significance, the large number of determinants that are now significant stands out. In this sense, we find that the higher proportion of workers whose labor rights were affected negatively affects wage bargaining power by  $-0.161\%$ ; however, having a fixed-term contract increases it by  $0.563\%$ . Additionally, a 1 percentage point increase in the job search rate is estimated to decrease wage bargaining power by  $-1.794\%$ , as well as tax revenues ( $-0.402\%$ ). Interestingly, it is precisely the regional aggregate variables that have gained significance in this new specification. Finally, except for working in a small firm, the coefficients of the region-sector level regression were mostly reduced (in absolute value), particularly the effect of education and gender, which were reduced by more than half.

For men's case, something particular happens with the significance of the coefficients: compared with the region-sector sample, instead of race matters, now class matters, and instead of permanent contracts positively affecting wage bargaining power, now fixed-term contracts do. As for the total sample, the value of coefficients is lower with respect region-sector estimation. Additionally, the coefficients for the percentage of workers in a small firm, the percentage of workers with affected labour rights and the job search rate gain significance, all hurting wage bargaining power in  $-1.468\%$ ,  $-0.179\%$  and  $-1.739\%$  respectively.

Finally, for the case of women, surprisingly, all the determinants that were significant in the region-sector estimation lost their significance for this specification. Thus, neither education, nor working in a small firm, nor having a fixed-term contract significantly affect women's wage bargaining power. Interestingly, only the number of unions is found to have a slight but positive significant effect on wage bargaining power ( $0.056\%$ ).

## 7. Discussion

In this section, I will briefly discuss the results found, in order to better understand them. First, it is important to note that the wage bargaining power index found is around 0.26, which means that workers have only a quarter of the total power they should have to translate all their productivity into wages. This is no small thing; this large gap between productivity and wages may be a sign of the lack of social dialogue between workers and capitalists in the Peruvian labour market, as well as pose serious problems for democracy and the exercise of citizenship. In particular, this gap represents a great challenge for achieving equality in a democratic society, since it is largely explained by the historically and socially excluded groups, such as women, Afro-Peruvians and indigenous people, as well as those who are below the poverty line.

Also, for regressions, regarding the results found for the sample that does not impute the wage bargaining power index, it is important to consider that this measure does not consider the poorest or least productive regions. This may be the reason why the effect of social institutions on bargaining power is underestimated, and variables such as contract types, job search rate and economic growth become more important.

In addition, in almost all cases, it is evident that women are much more empowered by education and having a contract, whether permanent or fixed-term, than men. In the case of education, this would show that education enables women to better translate their productivity gains into higher wages than men. Regarding the types of contract, this could



reflect the large gap between women with some type of contract and those with none, which is considerable, as well as the importance of proper labour inspection in regions-sectors where women are concentrated.

Furthermore, it highlights the great capacity of socio-institutional variables to explain wage bargaining power. However, the other institutional variables generally do not have such a capacity. Before discarding the real importance of these variables on wage bargaining power, it would be worth considering alternative or more disaggregated forms of measurement, because, as evidenced in the aggregate sample at regional level, many of these coefficients improve their significance.

Finally, the characteristics of the labour and productive structure of the Peruvian economy described in Appendix B are shared to some extent with other former primary-exporting colonies (Marini, 1973). In particular, the results obtained in this research are stepping stones towards a better understanding of labour markets in societies with important gender, race and class biases. This opens up an important line of research in studies of wage bargaining power, particularly for countries with these characteristics.

## 8. Conclusions

Neoclassical approach allows to recognize the existence of gaps between labour productivity and wages, these are explained by the existence of price rigidities or imperfect competition mechanisms. However, this is not the whole history, just one part of it. In fact, there are socio-political-labour institutions which are able to explain the gap between labour productivity and wages. Hence, I created the Wage Bargaining Power Index, an index which takes the value of 0 if workers are paid as little as possible and takes the value of 1 if they are paid the value they generate.

Based on labour productivity which comes from wage-related GDP and imputing the index to 0 for region-sectors which minimum wage is higher than average wages, I found a Wage Bargaining Power Index for Peruvian labour market which move around 0.26 in the period 2007-2019, which means that workers have only a quarter of the total power they would need to have for all their productivity to be translated into wages. Additionally, I found a clear gender gap, which favors men, who have an index ranging from 0.25 to 0.31, while the index for women fluctuates between 0.21 and 0.25.

Additionally, I estimated some drivers of Wage Bargaining Power based on a literature review. In general, I found some positive effects on education and fixed-term contracts, and negative effects of being women, non-white, working in a small-enterprise, violation of labour rights, the job search rate and tax revenues paid. Concerning drivers by gender, I found that while men are disadvantaged by their class status and race (social institutions), education and fixed-term contracts empower women's wage bargaining power. However, working in a small business and the job search rate (only in region-sectors whose average wages are higher than minimum wage) have a greater negative effect on women than on men.

Finally, the importance of socio-institutional variables shows the need for public policies to consider the gaps generated by historical discrimination and exclusion. Likewise, there is a need to change social structures, which are responsible for the gaps found in social institutions. Otherwise, these gaps will not be closed, since the variables that can be the

subject of public policies (such as education) do not have a sufficiently large effect to close them.

## Appendix

### Appendix A: Resolution of Wage Bargaining Power Index equation.

Assuming a non-linear relationship between bargaining power  $p$  and wages (and profits), one has the following wage equation.

$$W = A^p * W_{rw}^{1-p}$$

$$\log(W) = \log(A)^p + \log(W_{rw})^{1-p}$$

*(Variables in logarithms are represented in lower case)*

$$w = p * a + (1 - p) * w_{rw}$$

$$w = p * a - p * w_{rw} + w_{rw}$$

$$w - w_{rw} = p(a - w_{rw})$$

$$p = \frac{w - w_{rw}}{a - w_{rw}}$$

### Appendix B: Main characteristics of Peruvian labour market structure.

This section quickly describes some characteristics of the structure of the Peruvian labour market. First, concerning production and employment, Table 6 shows an apparent correlation between the distribution of production and employment at aggregate levels (primary, secondary and tertiary), with an important presence of the tertiary sector in both production (59.1%) and employment (59.2%).

However, while this distribution is very similar at the level of economic activity, in the primary sector there is a clear contradiction between the considerable GDP generated by mining activities and the minuscule amount of employment they generate, as opposed to agriculture, which despite employing almost a quarter of the EAP, only represents 5.8% of Peruvian GDP. This characteristic is very typical of primary exporting countries such as Peru, but also with others that share a colonial history and, therefore, the same position in the international distribution of labour, such as Latin America and Africa (Marini, 1973).

Likewise, with respect to the occupational category of workers, the difference between mining and agriculture is again evident in the primary sector. The former has very few self-employed workers and, on the contrary, a large number of salaried workers, most of them in large companies; while in the latter almost half of the workers are self-employed and the few salaried workers are employed in micro-enterprises. Concerning the secondary sector, the lowest proportion of self-employed workers are found in this sector, evidently due to the difficulty of producing goods and inputs individually, in contrast to the significant percentage of salaried workers (66.2%). Finally, for the tertiary sector, there is great heterogeneity in the percentage of self-employed and salaried workers, with Transportation and communications having more of the former and Financial services having more of the latter.

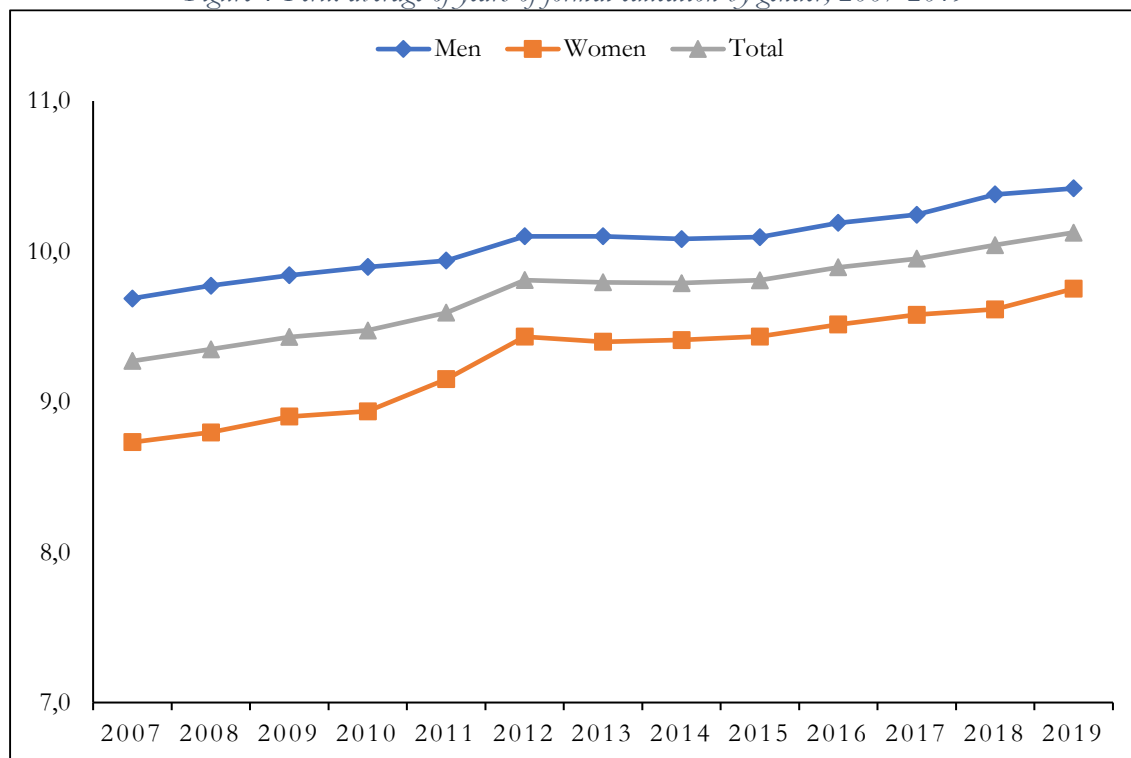
Table 6 Peru: GDP and employment, 2017-2019

Sector	GDP	Employment				
		Total	Self-employment	Total	Wage earner Micro firms	Huge firms
<b>Primary</b>	<b>20,1%</b>	<b>25,7%</b>	<b>45,0%</b>	<b>25,9%</b>	<b>58,6%</b>	<b>22,0%</b>
Mining	13,8%	1,2%	7,5%	90,0%	15,7%	53,2%
Agriculture	5,8%	24,0%	46,9%	22,2%	66,7%	16,3%
Fishing	0,4%	0,6%	41,6%	49,7%	63,6%	15,8%
<b>Secondary</b>	<b>20,8%</b>	<b>15,0%</b>	<b>23,5%</b>	<b>66,2%</b>	<b>51,9%</b>	<b>24,0%</b>
Industry	14,3%	9,0%	29,1%	60,2%	40,6%	33,0%
Construction	6,5%	6,0%	15,0%	75,3%	65,4%	13,2%
<b>Tertiary</b>	<b>59,1%</b>	<b>59,2%</b>	<b>36,7%</b>	<b>50,5%</b>	<b>46,4%</b>	<b>26,2%</b>
Other services	15,0%	13,7%	16,8%	63,6%	37,5%	22,8%
Commerce	11,5%	18,9%	50,0%	34,5%	58,5%	21,4%
Transport and communications	6,1%	7,6%	69,4%	27,2%	45,5%	24,6%
Public Administration	5,6%	4,2%	0,0%	99,9%	0,0%	100,0%
Business services	5,4%	5,2%	27,7%	66,8%	26,7%	38,4%
Financial services	5,0%	0,9%	3,6%	95,8%	6,8%	74,7%
Telecommunications	4,9%	0,9%	15,5%	76,8%	23,2%	47,6%
Accommodation and restaurants	3,5%	7,5%	39,4%	42,8%	73,1%	8,2%
Energy	2,0%	0,5%	41,2%	54,7%	17,9%	65,1%
<b>Total</b>	<b>100,0%</b>	<b>100,0%</b>	<b>36,9%</b>	<b>46,5%</b>	<b>50,0%</b>	<b>17,9%</b>

Note: Micro firms are composed of firms with between 2 and 10 workers, and large firms have more than 100 workers.  
Source: INEI, BCRP.

On the other hand, with respect to the human capital of Peruvian workers, Figure 4 shows a steady increase in the average years of education for both men and women, even though the former have slightly less than 1 year more on average than the latter. It is also important to note that this average is below the number of years required to complete basic education (11 years).

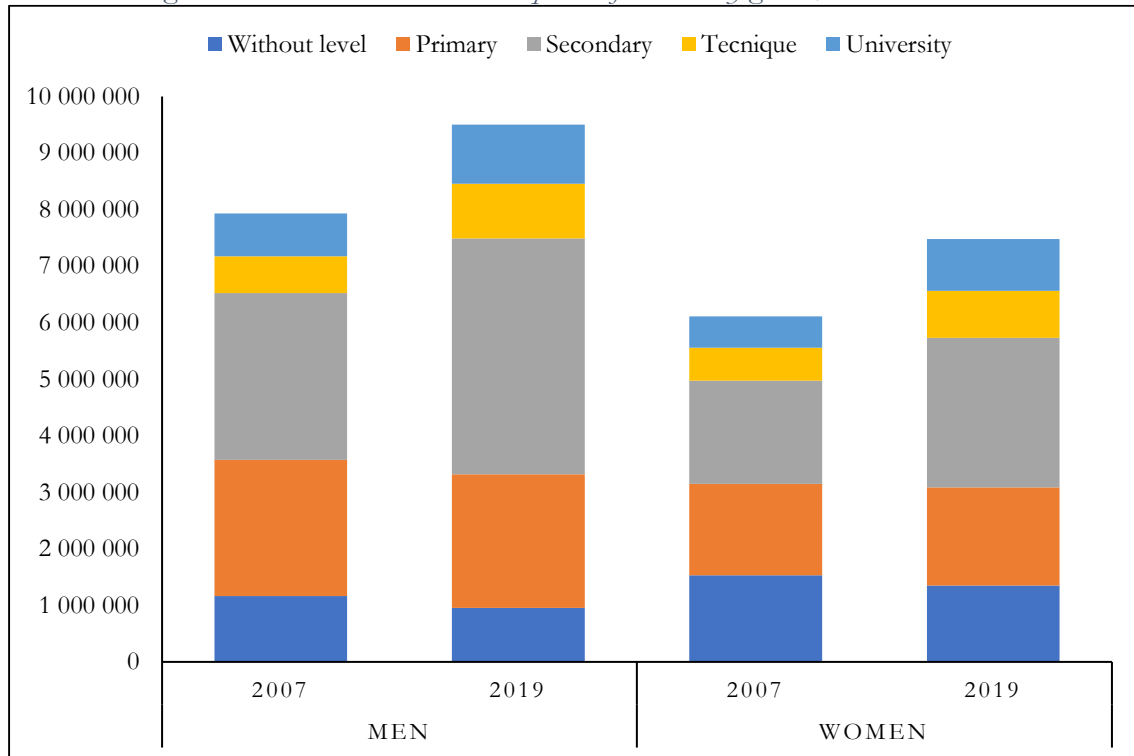
Figure 4 Peru: average of years of formal education by gender, 2007-2019



Source: INEI.

The average number of years of formal education below the number of years required to complete basic education, shown in Figure 4, is explained by the significant percentage of Peruvian workers with only primary education or no education at all. Figure 5 shows that more than 6 million male and female workers in Peru do not have any level of education or have only completed primary education. In contrast, only about 2 million men and women have completed higher education (technical or university).

Figure 5 Peru: Educational level completed of workers by gender, 2007 and 2019



Source: INEI.

## Annexes

Table A1 Peru: Wage Bargaining Power Index by region-sector, 2007-2019.

Region - sector	Wages	Labour productivity	Wage Bargaining Power Index		
			Mean	Min	Max
Callao - primary	2 525	4 719	0,69	0,43	0,92
Moquegua - primary	3 647	26 124	0,43	0,35	0,51
Moquegua - tertiary	1 623	4 116	0,42	0,35	0,54
Lima - primary	1 974	7 023	0,41	0,32	0,48
Lima - tertiary	1 802	5 822	0,40	0,35	0,45
San Martín - tertiary	1 291	2 771	0,38	0,23	0,69
Callao - tertiary	1 594	4 652	0,38	0,30	0,48
Madre de Dios - tertiary	1 356	3 337	0,38	0,26	0,50
Loreto - tertiary	1 353	3 033	0,37	0,29	0,42
Arequipa - tertiary	1 532	4 239	0,36	0,33	0,45
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Apurímac - tertiary	963	2 486	0,14	0,00	0,34
Apurímac - secondary	1 074	5 338	0,13	0,00	0,26
Huancavelica - tertiary	1 040	5 869	0,12	0,06	0,22
Cusco - primary	1 123	12 600	0,12	0,00	0,26
Apurímac - primary	937	5 208	0,11	0,00	0,34
Huancavelica - secondary	1 012	6 485	0,10	0,00	0,21
Huánuco - primary	871	3 222	0,06	0,00	0,23
San Martín - primary	829	2 303	0,06	0,00	0,22
Ayacucho - primary	813	4 631	0,03	0,00	0,13
Amazonas - primary	676	3 748	0,00	0,00	0,00

Note: For wages lower than minimum wage, the index assumes a value of 0. Wages and labour productivity are expressed in real values for 2019.

Source: INEI, MTPE.

Own elaboration.

*Table A2 Econometric variables*

<b>Type</b>	<b>Variables</b>	<b>Operational definition</b>	<b>Level of disaggregation</b>	<b>Institution</b>
Mincer's variables	Log of years of education	Logarithm of average years of formal education	Regional and sectorial	ENAHO - INEI
	Log of years of work experience	Logarithm of average work experience in the firm	Regional and sectorial	ENAHO - INEI
Socio-institutional variables	Gender share	Percentage of women full-time wage earners	Regional and sectorial	ENAHO - INEI
	Class share	Percentage of poor full-time wage earners	Regional and sectorial	ENAHO - INEI
	Race share	Percentage of indigenous and black full-time wage earners	Regional and sectorial	ENAHO - INEI
Labour economic and institutional variables	Small-enterprises share	Percentage of large firms	Regional and sectorial	ENAHO - INEI
	Ratio of affected workers	Ratio of the number of workers whose labour rights were affected by the total number of full-time wage earners	Regional	MTPE
	Permanent contract share	Percentage of full-time wage earners with fixed contracts	Regional and sectorial	ENAHO - INEI
	Fixed contract share	Percentage of full-time wage earners with permanent contracts	Regional and sectorial	ENAHO - INEI
	Number of unions	Number of registered unions	Regional	MTPE
	Job search rate	Proportion of individuals actively seeking employment, regardless of whether they are unemployed or employed, in the Economically Active Population.	Regional	ENAHO - INEI
	Log of tax revenues	Logarithm of tax revenues	Regional	INEI
Politic-institutional variables	Number of social conflicts	Number of registered social conflicts	Regional	Defensoría del Pueblo
Business cycle	Variation of logarithm GDP	Annual variation of GDP	Regional and sectorial	INEI
Sample	Log of full-time wage earners	Logarithm of full-time wage earners	Regional and sectorial	ENAHO - INEI

Table A3 Peru: Drivers of Wage Bargaining Power Index by gender (conventional labour productivity)

Variables	General	Men	Women
Log of years of education	1,486** (0,697)	1,498* (0,827)	3,084** (1,204)
Log of years of work experience	0,285 (0,268)	0,141 (0,185)	0,632 (0,468)
Gender share	-3,243** (1,594)	(omitted)	(omitted)
Class share	-2,202 (1,439)	-1,633 (1,045)	0,058 (1,025)
Race share	-0,874* (0,521)	-0,352 (0,332)	1,451 (1,034)
Small-enterprises share	-1,251** (0,524)	-0,82*** (0,235)	-2,65** (1,313)
Ratio of affected workers	-0,269 (0,195)	-0,04 (0,154)	0,207 (0,455)
Permanent contract share	0,777 (1,368)	0,69 (0,737)	2,318 (1,66)
Fixed contract share	1,28 (1,11)	0,624 (0,87)	4,379*** (1,003)
Number of unions	-0,005 (0,004)	-0,003 (0,003)	0,004 (0,017)
Job search rate	-0,428 (1,154)	-2,368* (1,406)	3,085 (4,63)
Log of tax revenues	-0,325** (0,156)	-0,368** (0,15)	0,207 (0,74)
Number of social conflicts	0,007 (0,012)	0,008 (0,007)	0,02 (0,032)
$\Delta$ GDP	0,063 (0,191)	-0,092 (0,116)	0,533 (1,239)
Log of full-time wage earners	0,759** (0,343)	0,655** (0,31)	0,072 (0,351)
Constant	-7,221 (4,351)	-5,923** (2,937)	-16,209 (10,112)
N	575	571	557
AIC	1 161	895	2 368
R <sup>2</sup> adjusted	0,125	0,103	0,197

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

*Table A4 Drivers of Wage Bargaining Power Index by gender (not imputing index to 0)*

<b>Variables</b>	<b>General</b>	<b>Men</b>	<b>Women</b>
Log of years of education	1,093*** (0,357)	0,844*** (0,316)	0,948 (0,662)
Log of years of work experience	0,073 (0,161)	0,113 (0,104)	0,339 (0,301)
Gender share	-0,694* (0,379)	(omitted)	(omitted)
Class share	-0,46 (0,305)	-0,583** (0,246)	-0,091 (0,593)
Race share	-0,066 (0,201)	-0,127 (0,174)	-0,086 (0,42)
Small-enterprises share	-0,775** (0,386)	-0,644** (0,312)	-0,264 (0,625)
Ratio of affected workers	-0,196 (0,126)	-0,251* (0,128)	-0,399 (0,279)
Permanent contract share	0,988** (0,451)	0,781* (0,42)	2,46*** (0,493)
Fixed contract share	0,977** (0,379)	0,701** (0,33)	1,904*** (0,487)
Number of unions	0 (0,002)	-0,002 (0,003)	0,007 (0,008)
Job search rate	-2,401*** (0,732)	-1,682*** (0,604)	-4,208* (2,295)
Log of tax revenues	-0,377*** (0,088)	-0,298*** (0,086)	-0,108 (0,254)
Number of social conflicts	0,001 (0,004)	0 (0,005)	0,019 (0,016)
$\Delta$ GDP	-0,285** (0,111)	-0,246** (0,114)	0,367 (0,52)
Log of full-time wage earners	0,321*** (0,083)	0,351*** (0,082)	0,374* (0,188)
Constant	-1,958 (1,484)	-2,663** (1,327)	-7,723* (4,581)
N	581	585	440
AIC	2	77	1 021
R <sup>2</sup> adjusted	0,273	0,196	0,159

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.



Table A5 Peru: Drivers of Wage Bargaining Power Index by gender (Moulton problem solved)

Variables	General	Men	Women
Log of years of education	0,998* (0,533)	-0,016 (0,444)	9,462 (5,937)
Log of years of work experience	0,309 (0,439)	0,219 (0,205)	2,49 (1,985)
Gender share	-1,654*** (0,42)	(omitted)	(omitted)
Class share	-1,631** (0,7)	-0,887** (0,364)	-5,886 (4,268)
Race share	-0,737 (0,491)	-0,439 (0,276)	-0,302 (2,064)
Small-enterprises share	-1,546** (0,558)	-1,468*** (0,35)	-5,336 (4,938)
Ratio of affected workers	-0,161* (0,09)	-0,179* (0,092)	-0,652 (0,911)
Permanent contract share	0,163 (0,639)	0,431 (0,483)	5,324 (7,35)
Fixed contract share	0,563* (0,298)	0,431* (0,248)	4,478 (3,662)
Number of unions	0,001 (0,003)	-0,001 (0,002)	0,056* (0,027)
Job search rate	-1,794** (0,838)	-1,739** (0,829)	-1,037 (6,233)
Log of tax revenues	-0,402** (0,146)	-0,313*** (0,105)	-0,761 (1,145)
Number of social conflicts	0,005 (0,007)	0,001 (0,006)	0,07 (0,046)
$\Delta$ GDP	-0,223 (0,204)	-0,225 (0,19)	-0,177 (1,289)
Log of full-time wage earners	0,47* (0,229)	0,469*** (0,163)	-1,532 (1,297)
Constant	-2,873 (3,215)	-1,689 (2,435)	-5,599 (16,003)
N	200	200	200
AIC	-130	-227	785
R <sup>2</sup> adjusted	0,346	0,346	0,2

Note: \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

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